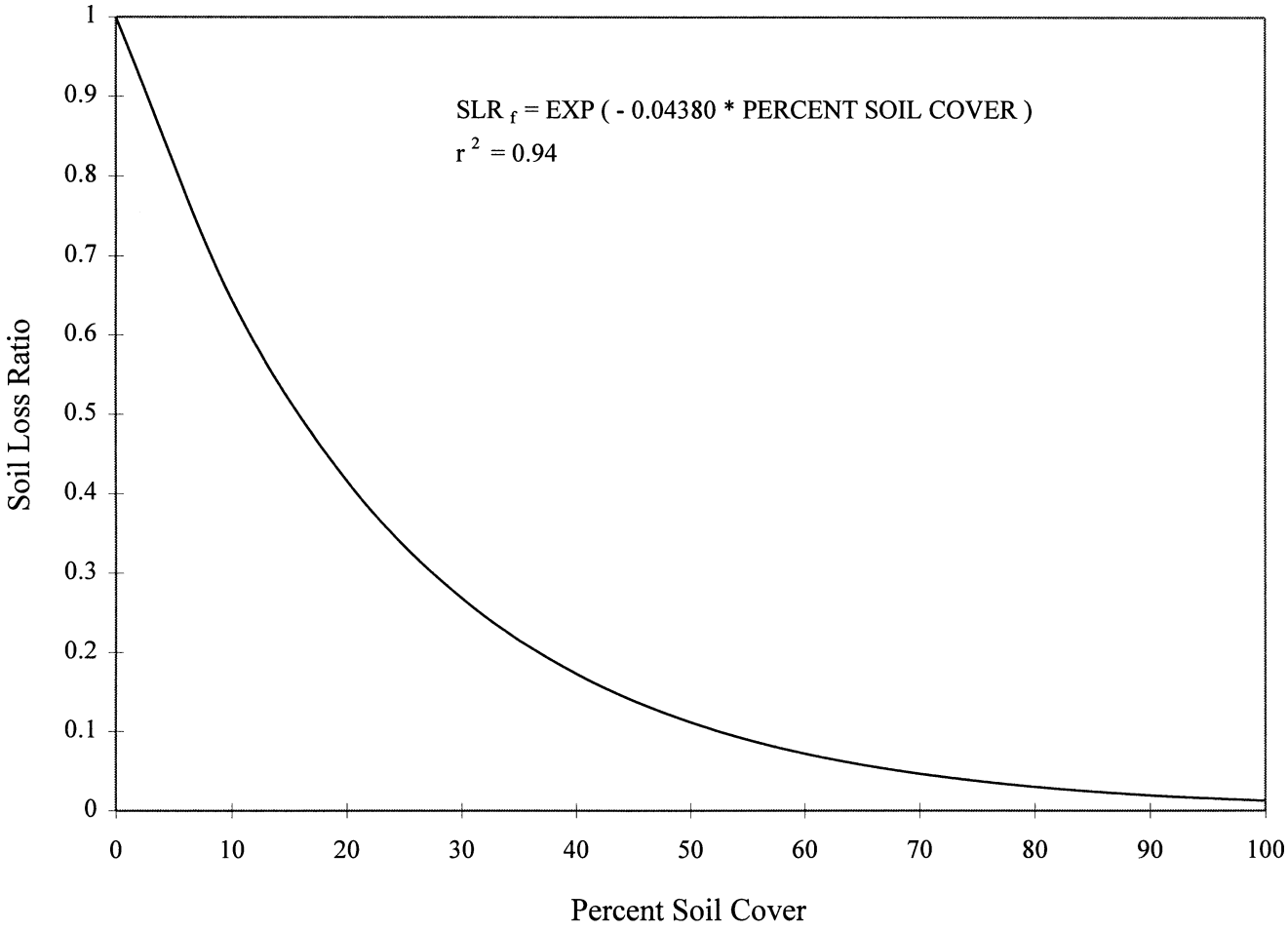


Relationship between percent of soil surface covered with nonerodible materials and soil loss ratio (SLRf=soil loss from partial cover divided by soi loss from bare soil).

Fryrear, D.W., Ali Saleh, J.D. Bilbro, H.M. Schomberg, J.E. Stout, and T.M. Zobeck. 1998. Revised Wind Erosion Equation (RWEQ). Wind Erosion and Water Conservation Research Unit, USDA-ARS, Southern Plains Area Cropping Systems Research Laboratory. Technical Bulletin No. 1. Internet address: http://www.csrl.ars.usda.gov/wewc/rweq.htm

Measuring crop residue: Line-transect method

HOW-TO

The conservation tillage (no-till, mulch-till, ridge-till) goal:
Leave 30 percent or more crop residue after planting.

Here's a step by step procedure for using the line-transect method to measure the percentage of crop residue protecting your soil.

Step one: Select an area in the field that is representative of the whole field. Avoid end rows, areas affected by flooding, drought, weed or insect infestations.

Step two: Lay out a 100- or 50-foot line diagonally to the direction of the rows in the field. This will give you a more accurate residue reading than following the rows. The tape or line you use should be clearly marked at regular intervals.

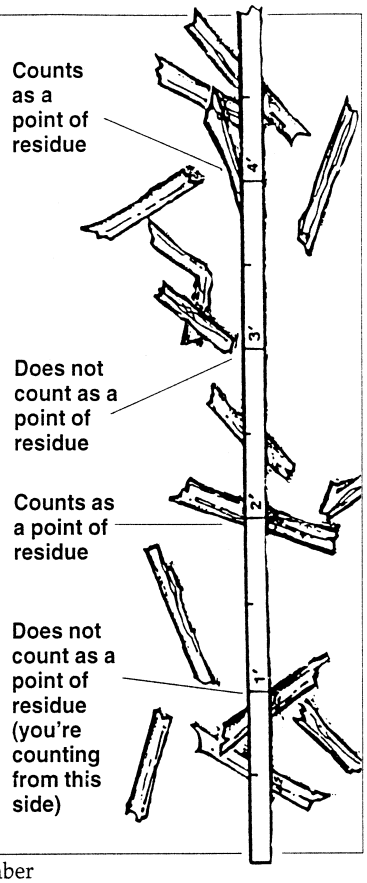
Step three: Anchor both ends of the line.

Step four: Walk along the line or tape and look straight down at each recording point. Count the number of points that are directly over a piece of residue. As you record numbers, remember to
- look straight down,
- always count from the same side of the line,
- avoid moving the tape while counting.

There will be some judgement calls. To help decide if the residue intersects the mark, remember that a piece of residue must be large enough to dissipate the energy of a raindrop during an intense storm. To be counted, the residue must be larger in diameter than this dot ●. Use a 3/32-inch diameter wooden dowel rod or brazing rod from a farm supply or hardware store to represent such a dot when you're in the field. Don't count the residue if it's too small or fails to intersect the mark.

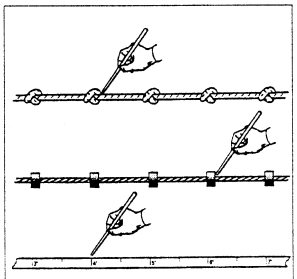
Looking straight down at the ground...

Using only one side of the measuring tape, (for this illustration, we used the left side of the tape) check each one-foot mark. Count only if the residue is directly under each mark (in a real-field situation the residue should also be larger than this dot ● to be counted. Use a 3/32-inch wooden dowel rod to represent the dot when counting residue in the field).



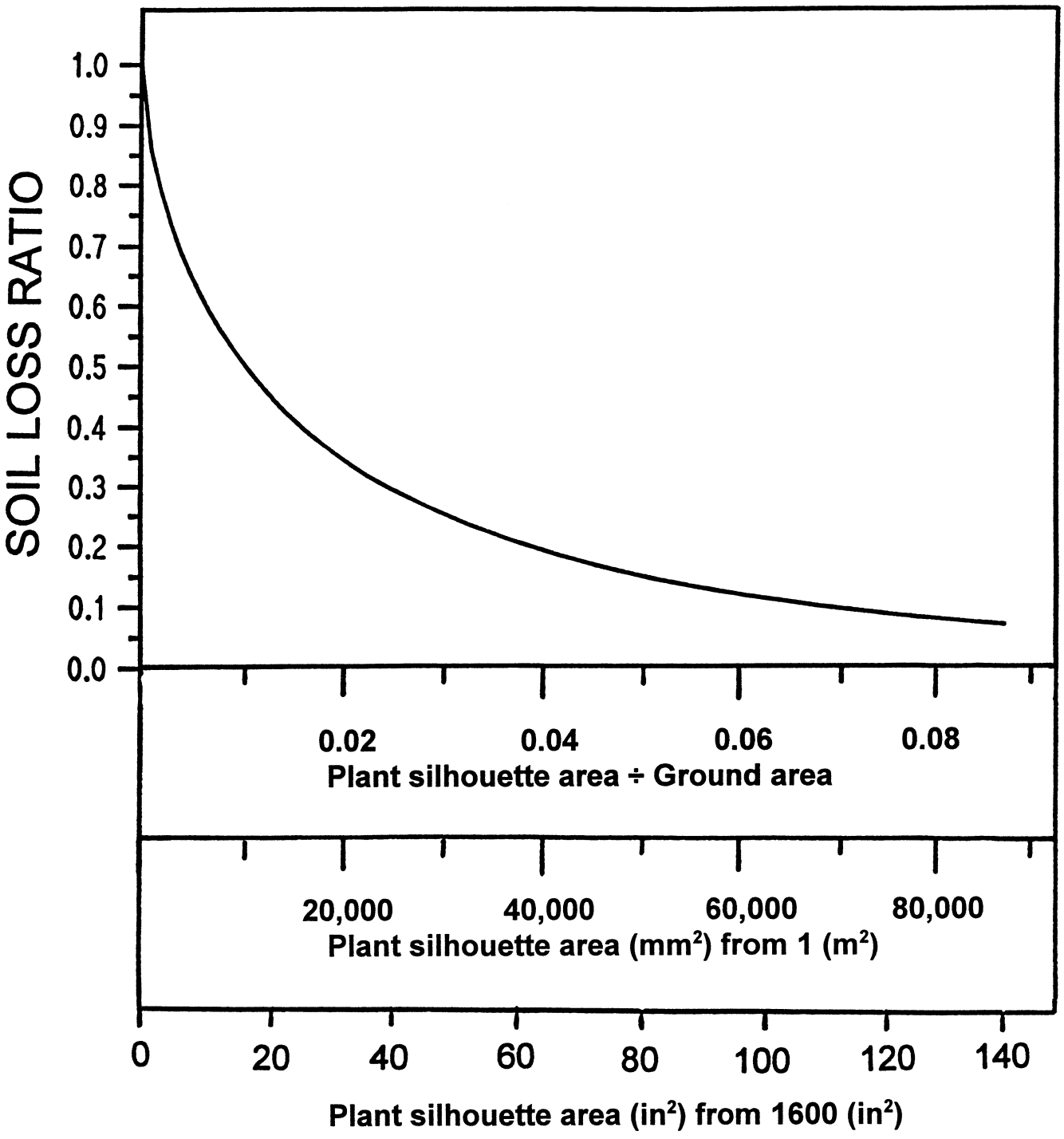
Step Five: The total number of intersections you found equals the percentage of ground surface covered by residue. If 44 out of 100 points intersect residue, then you have 44 percent residue coverage in this area of the field. On a 50-foot tape the number of marks that intersect residue must be multiplied by 2.

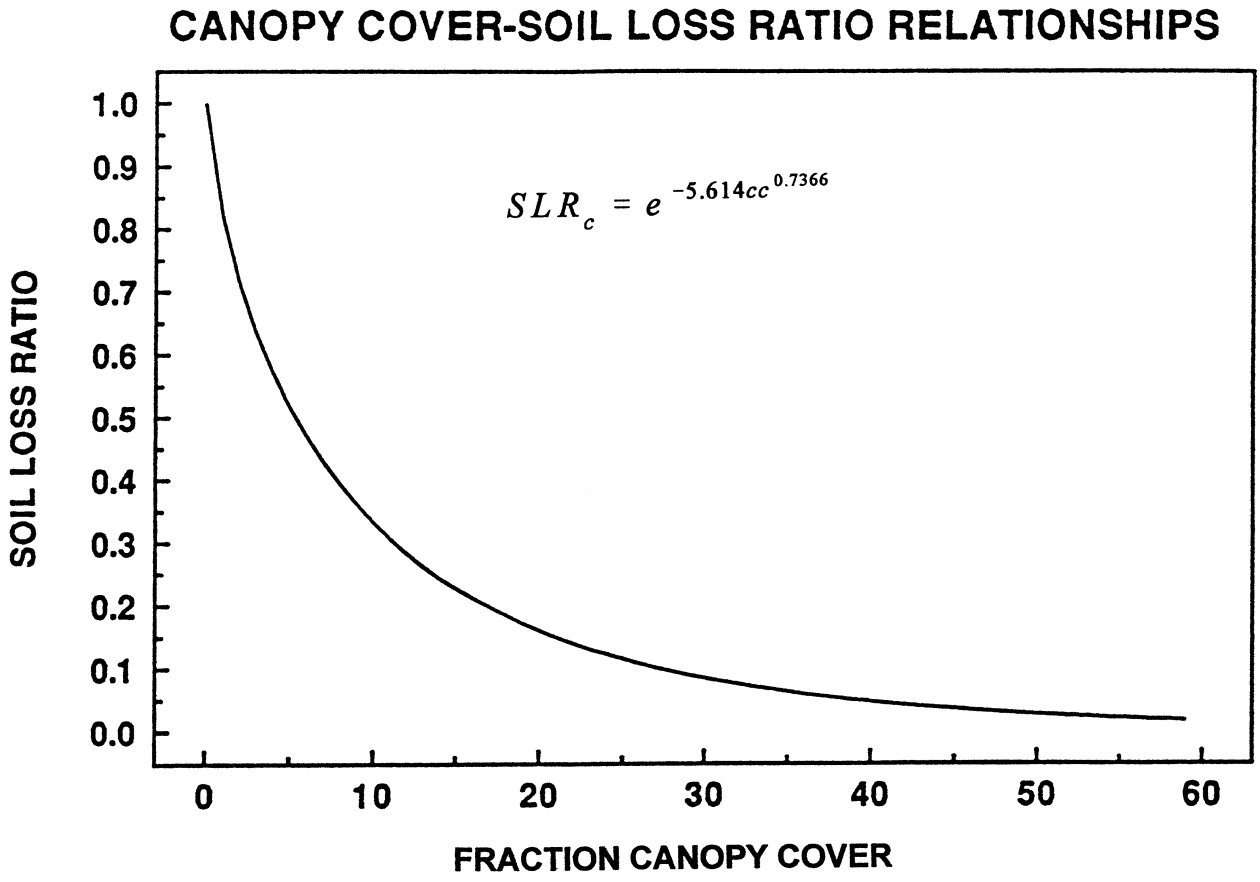
Step six: Repeat the procedure at three to five random locations in the field and average the results to arrive at an estimate of residue cover for the entire field.



You can use various types of measuring devices, but be sure you measure at the same point at each interval.

To help you determine ways to increase your crop residue levels, order a *Crop Residue Scorecard* from CTIC. Developed by the Equipment Manufacturers Institute and NRCS, the scorecard offers a formula which will help you estimate how implements, climatic conditions, and the type of residue your crop produces impact your crop residue levels. Just 25 cents a copy (four copy minimum order), 30 or more copies for 10 cents each. *Contact: Conservation Technology Information Center at (317) 494-9555.*


SOIL LOSS RATIO
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.02
0.04
0.06
0.08
Plant silhouette area ÷ Ground area
20,000
40,000
60,000
80,000
Plant silhouette area (mm²) from 1 (m²)
0
20
40
60
80
100
120
140
Plant silhouette area (in²) from 1600 (in²)



Relationship between percent of the soil surface covered with growing crop canopy and soil loss ratio.

Typical values of canopy cover for row crops and small grain crops from Table 5.1 in RUSLE Version 1.01

Fraction of land surface covered by canopy						
No. of days after planting	Corn	Soybeans	Cotton	Sorghum	Winter small grain [1]	Spring small grain
15	0.0	0.0	0.0	0.0	0.0	0.0
30	0.1	0.1	0.1	0.1	0.1	0.1
45	0.5	0.3	0.3	0.5	0.3	0.4
60	0.8	0.7	0.7	0.8	0.4	0.9
75	1.0	1.0	1.0	1.0	0.4	1.0
90	1.0	1.0	1.0	1.0	0.4	1.0
105	1.0	0.9	0.9	1.0	0.4	1.0
120	1.0	0.5	0.5	1.0	0.4	1.0
135	1.0	0.5	0.5	1.0	0.4	1.0
150	1.0	0.5	0.5	1.0	0.5	1.0
165	1.0	0.5	0.5	1.0	0.7	1.0
180	1.0	0.5	0.5	1.0	0.9	1.0
195	1.0	0.5	0.5	1.0	1.0	1.0
210	1.0	0.5	0.5	1.0	1.0	1.0

[1] These are specific areas with a spring and summer precipitation regime, and are not typical for the Northwestern Wheat and Range Region.